Adding Innovative Styling and Animation to Webpages

With CSS Effects

Session 202

These are confidential sessions—please refrain from streaming, blogging, or taking pictures.

Adding Innovative Styling and Animation to Webpages

With CSS Effects

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Rich Media Team
Internet Technologies Group

Introduction

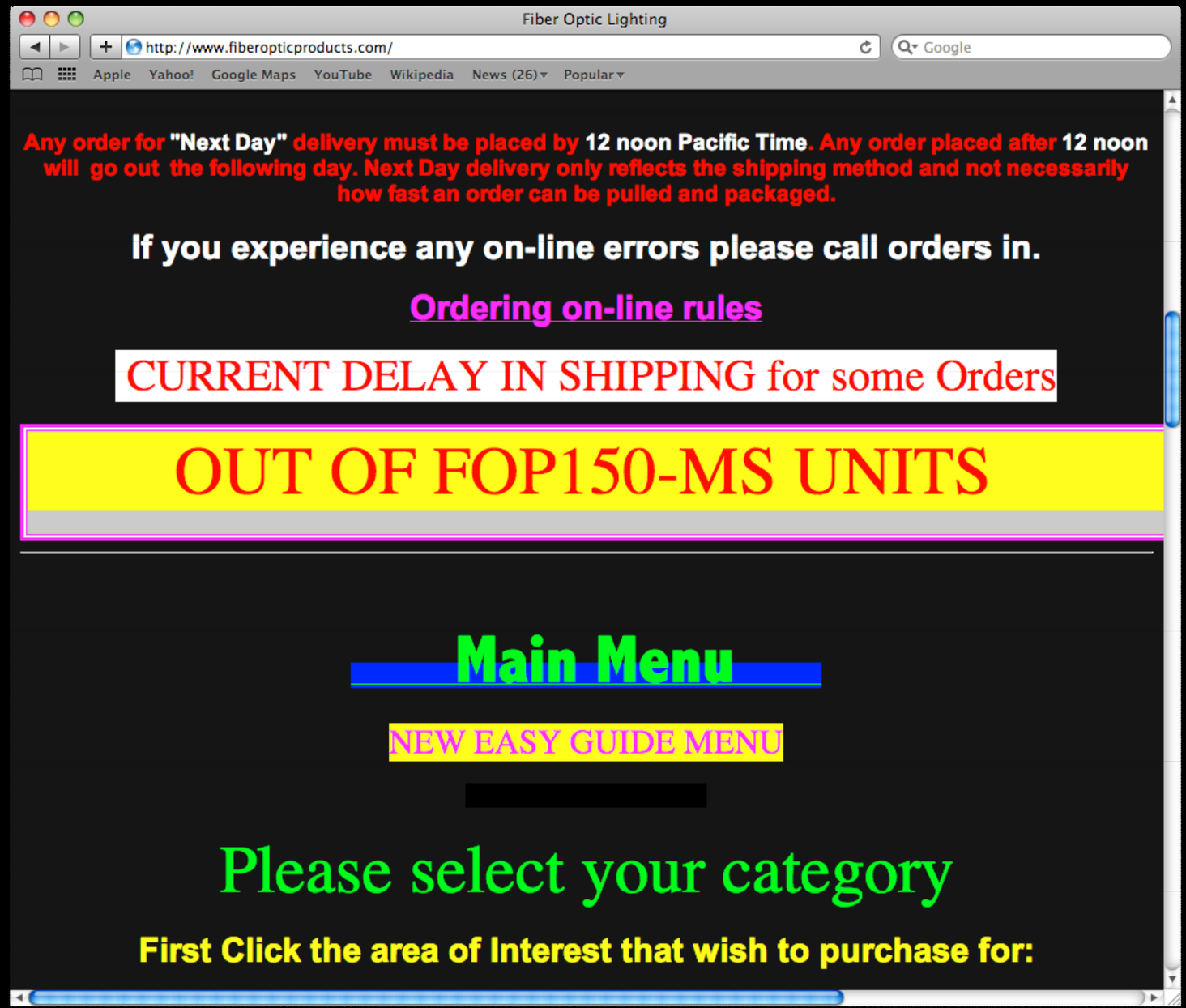
- How to use cutting-edge CSS features in WebKit
- Create innovative web experiences
- Safari on iPhone and desktop
- Tips to improve your website today

Text & Image Effects

Transitions & Animations

2D & 3D Transforms

Why CSS Effects?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Petrosains, The Discovery Centre

- Home
- Visitor's Guide
- Activities
- Educators
- Reaching Out
- Explore Science
- About Us

1. **Adventure of a lifetime**
   The Dark Ride takes you on a tranquil journey across rainforests, mountains and seas.
2. **Meet the oldest SINGING SENSATION EVER**
   A singing and rapping T-Rex!
3. **Watch a RUMBLING VOLCANO**
   Geotime Diorama gives you a blast from the past.
4. **Solve MINI MYSTERIES**
   15-minute science shows reveal fascinating discoveries on countless subjects.
5. **Share the fun with GROWN-UPS**
   Great interactive stuff from SPARKZ that is even perfect for adults.
6. **Hang on to an ACTION-PACKED HELICOPTER**
   Brave the storm in the Helicopter Flight Simulator.
7. **Drill for OIL**
   Land on an oil platform in the centre of the city.
8. **Discover the thrill of F1 RACING**
   SPEED! Unveils the cutting-edge technology behind motorsports.
9. **Encounter outerspace on EARTH**
   The Space Mini Exhibition gives you great insights on the world beyond.
10. **Exciting gift options at XPLORASI**
    Get fun and exciting science-based gifts, games and educational items from our gift shop.

10 REASONS TO CELEBRATE A DECADE OF WONDER AT PETROSAINS

DinoTrek 2

The interactive dinosaur exhibition that is set to thrill you! [more]

Reaching Out

Find out what Petrosains has in store for you beyond our location at KLCC. [more]

SPARKZ

Have endless fun at SPARKZ and let it bring out the child in you! [more]

SPACE

Discover galaxies, stars and planets, right here in Petrosains! [more]

Green Guide

Be an eco-warrior and join the quest to save our only home. [more]

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Apple – iPhone – Features – Home Screen

http://www.apple.com/iphone/features/homescreen.html

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iPhone 3G

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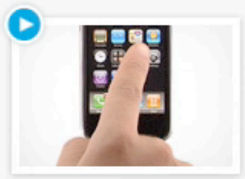
- Phone
- Mail
- Safari
- iPod
- SMS
- Maps with GPS
- iTunes Music Store
- App Store
- Calendar
- YouTube
- Photos + Camera
- Stocks, Weather, Notes
- Calculator

High Technology

3G

Home Screen

Get instant access to whatever you need. The Home screen takes you to iPhone applications and Web Clips with a single tap — even when you're on a call. And no two Home screens are alike. That's because you can customize yours with whatever applications and Web Clips you choose.



See the Home screen in action.

Watch the demo

Customize your Home screen.
Arrange the icons on your Home screen any way you want. Even move them to another Home screen. Create up to nine Home screens for quick access to your Web Clips and any applications you download from the App Store.

Add Web Clips.
If you check the same websites every day, create Web Clips and access them directly from your Home

Apple Developer Connection – Worldwide Developers Conference 2009 – Attendee Site – My Favorites

https://developer.apple.com/wwdc/attendee/favorites/index.php

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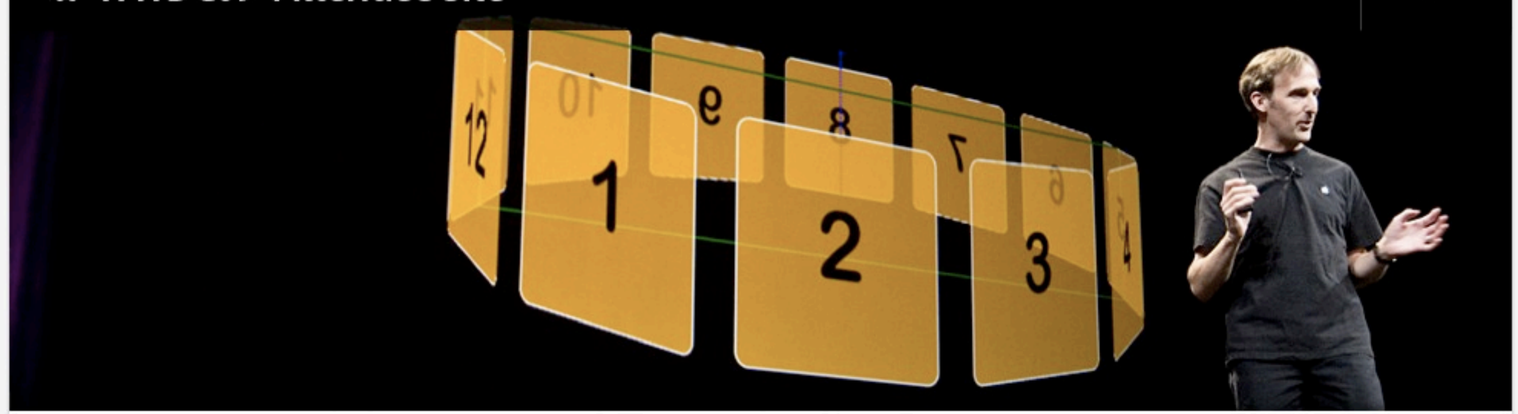

Sessions & Labs

Plan your week at WWDC. The conference schedule provides a detailed view of the sessions and labs planned for each day. Use the Grid view to see the conference schedule based on day and time, or select the List view to filter the conference schedule based on your interests, skill level, and between sessions and labs.

Loading...

Why Cascading Style Sheets?

- Separation of style from content
- Tailor presentation to different devices
- Easy to author
- Graceful fallback

Open Standards

- Enhancing web technology hand-in-hand with
  - HTML Working Group
    - HTML 5
  - W3C
    - http://www.w3.org/Style/CSS/current-work
- CSS draft properties
  - -webkit prefix

Technology Framework

- It is just web development
  - CSS properties
  - DOM events
- Works in Safari on iPhone and desktop
- And in UIWebView and WebView

Demo

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Text & Image Effects

Transitions & Animations

2D & 3D Transforms

Scalable, Accessible Content

Moving beyond static images

CSS Effects for Text

- Stroked text
- Text shadows
- Web fonts

CSS Effects for Elements

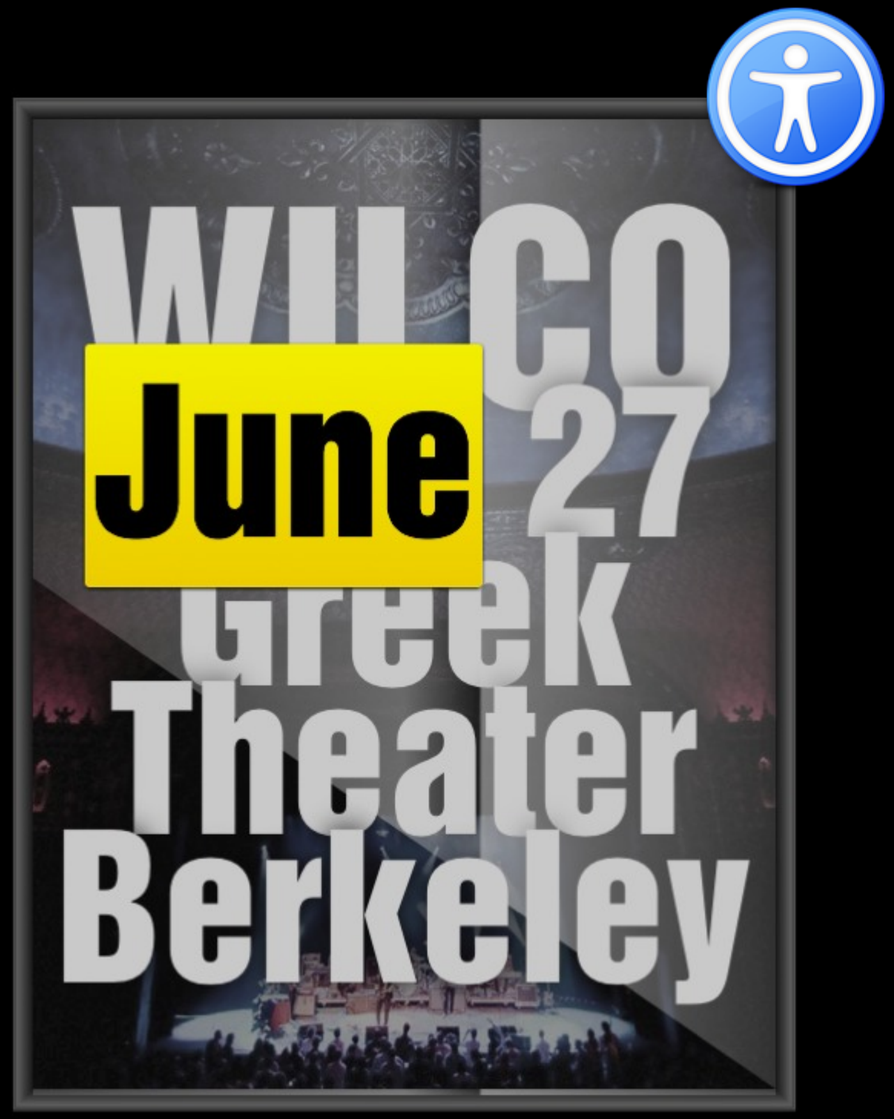
- Image borders
- Generated images
  - Gradients
  - Masks
  - Canvas
- Reflections

WILCO

background by:
flickr - spatulated

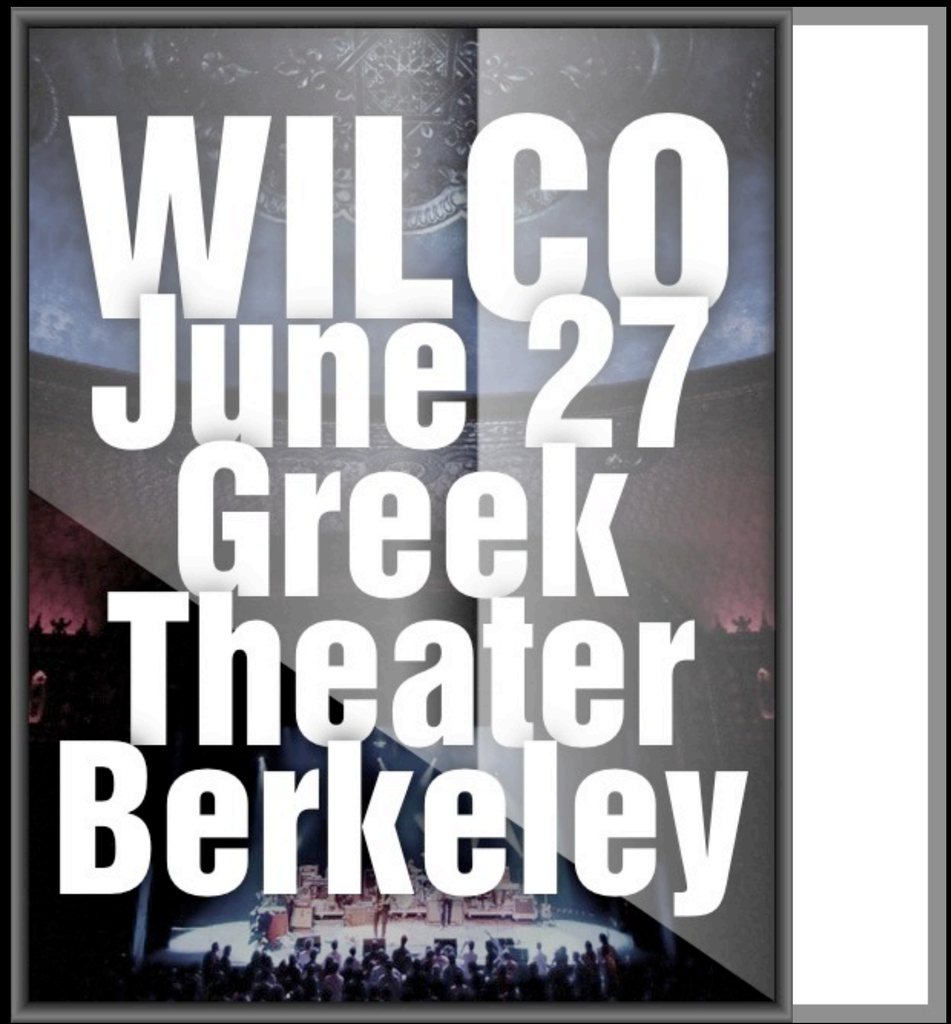
Advantages of Using CSS Effects

- Searchable and indexable
- Selectable
- Scalable
- Accessible
- Download size



Starting Point

```
<div id="poster">
  <h1>WILCO</h1>
  <p>June 27</p>
  <p><a href="http://maps.google.com/…">
      Greek Theater<br />Berkeley</a>
  </p>
</div>
```



Web Fonts

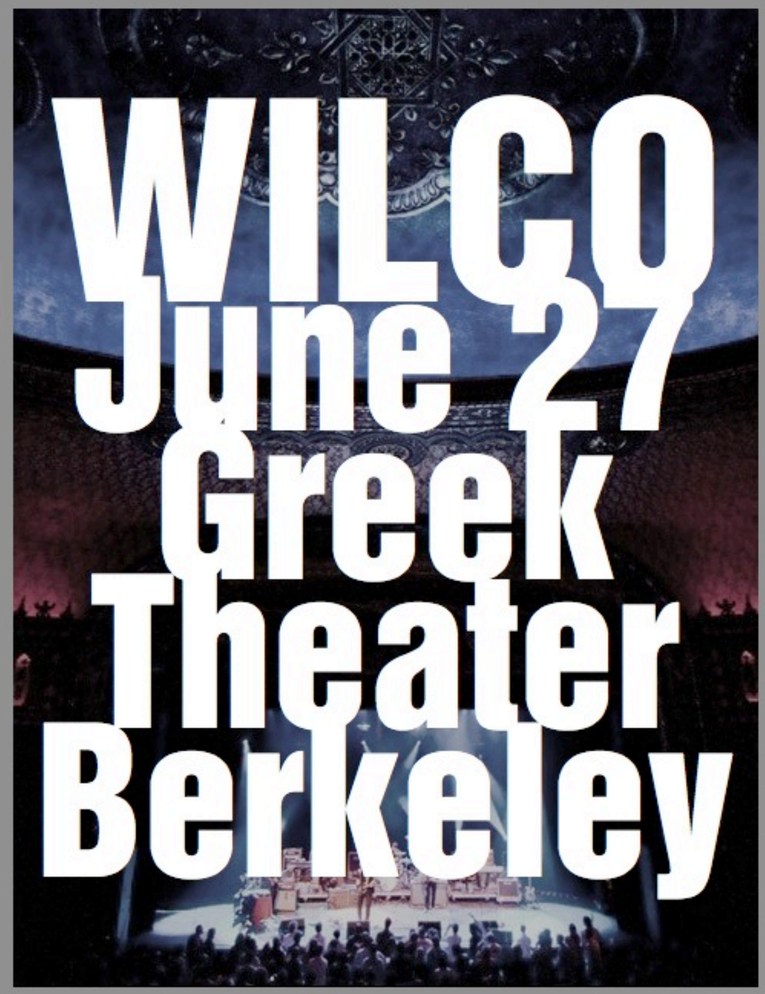
```
@font-face {
  font-family: "HelveticaNarrow";
  src: url("HelveticaInserat.otf");
}

#poster {
  font-family: HelveticaNarrow, Helvetica, sans-serif;
}
```

Text Adjustment

WILCO

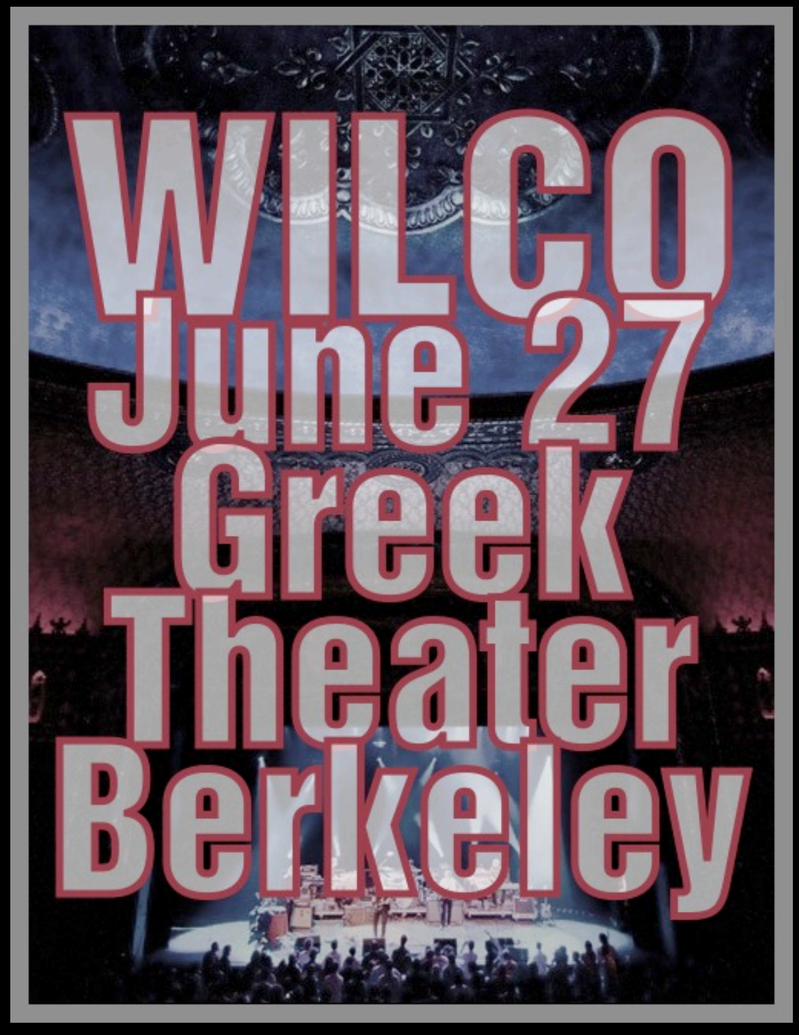
June 27

Greek Theater
Berkeley



Text Stroke and Alpha Colors

```
#poster {
  -webkit-text-stroke: 5px #465476;
  color: rgba(255, 255, 255, 0.6);
}
```



Text Shadow

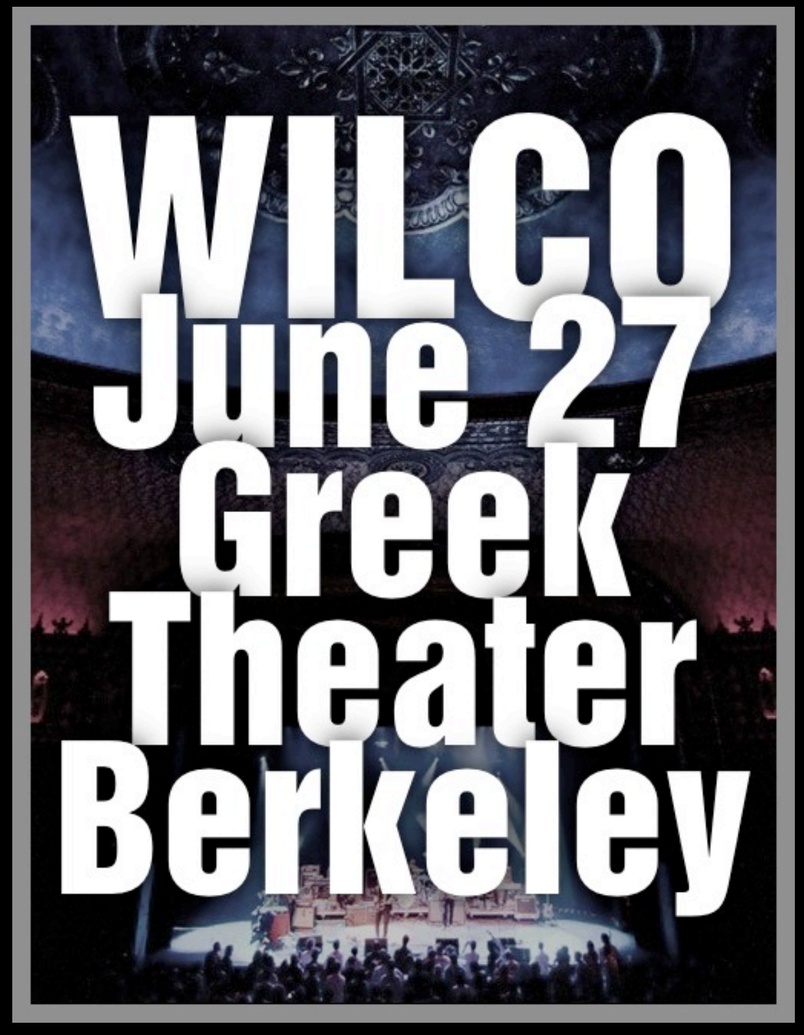
```
#poster {
  text-shadow: black 0 0 30px;
}
```

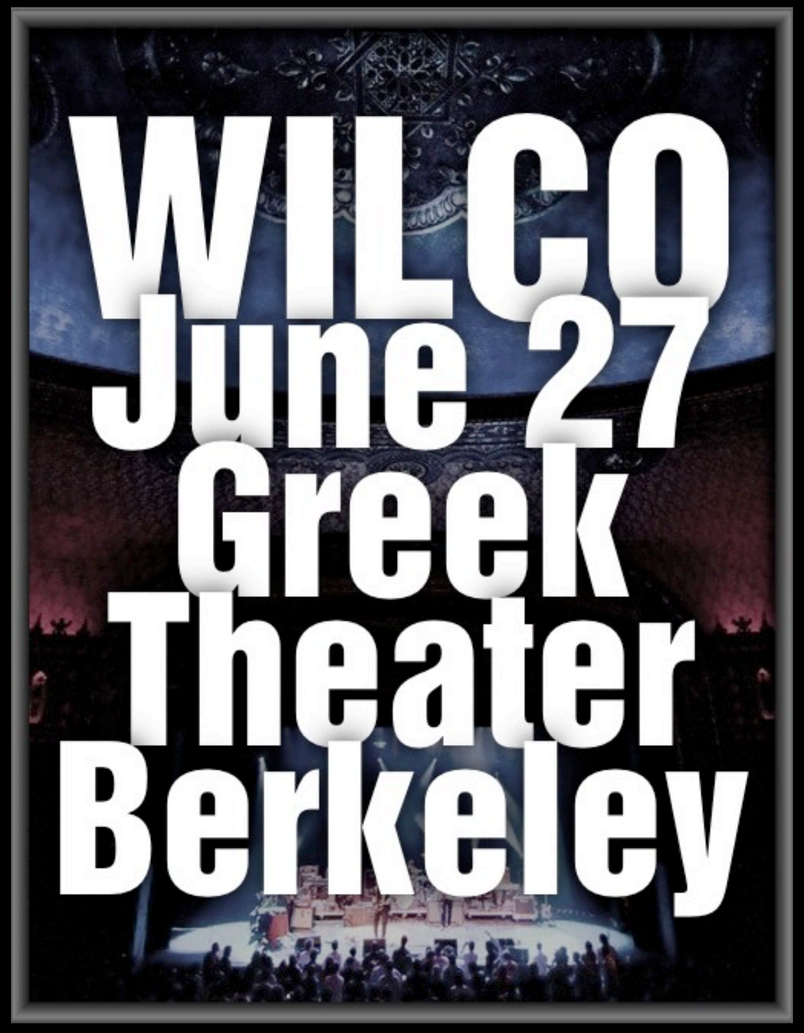
Color

X-Offset

Y-Offset

Blur Radius

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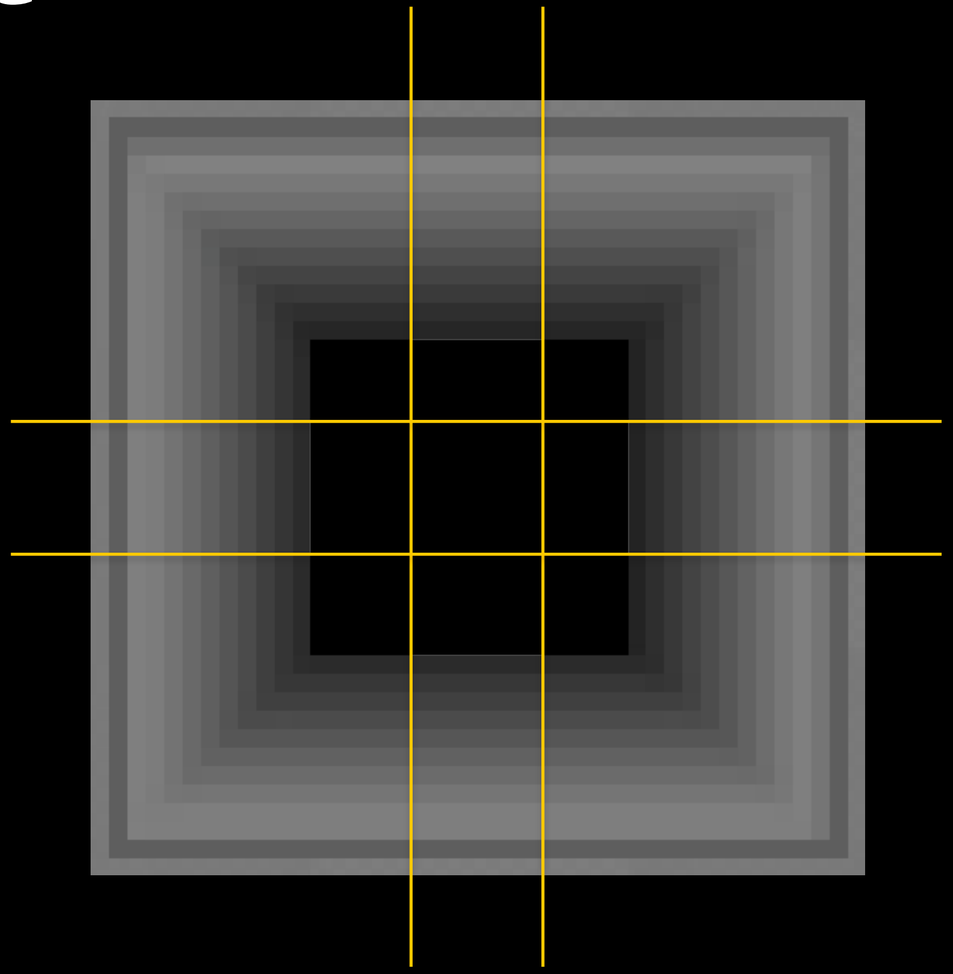
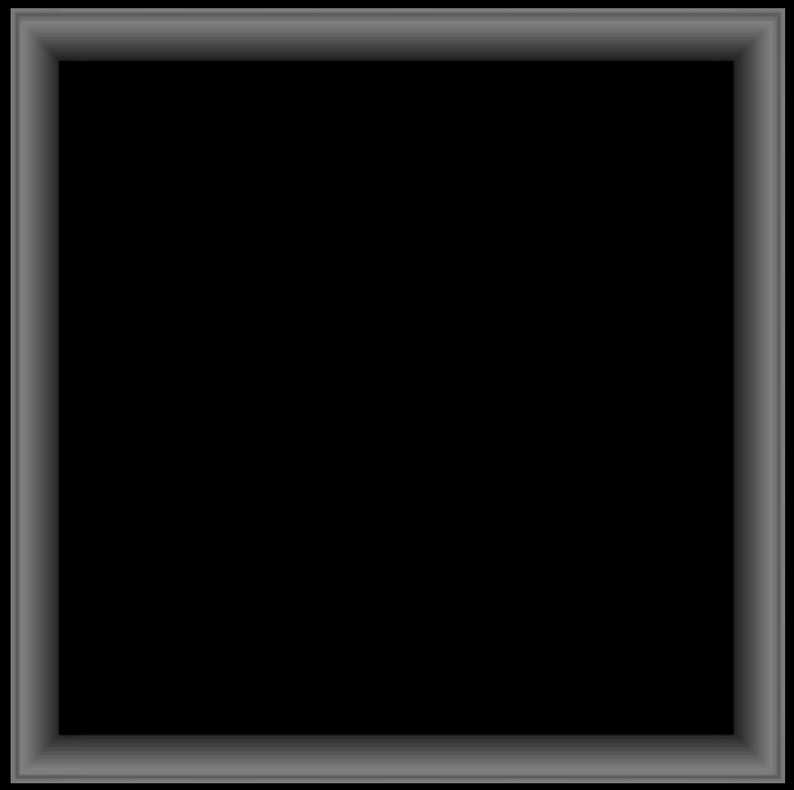
Greek
Theater
Berkeley

Border Image



```
#poster {
  border: 20px solid gray;
  -webkit-border-image: url(frame.png) 20 20 20 20 stretch stretch;
}
```

Border Image



```
#poster {
  border: 20px solid gray;
  -webkit-border-image: url(frame.png) 20 20 20 20 stretch stretch;
}
```

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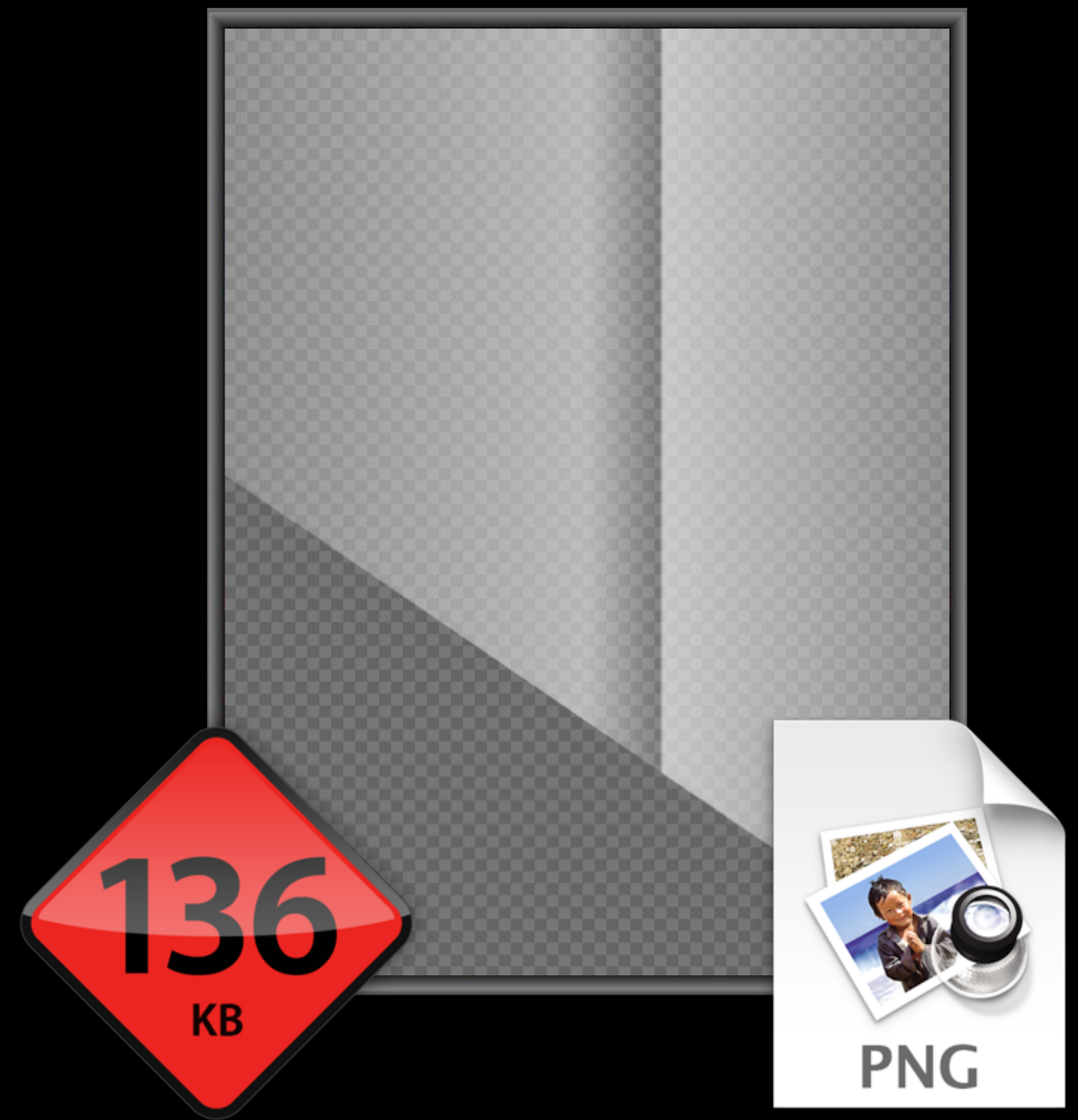
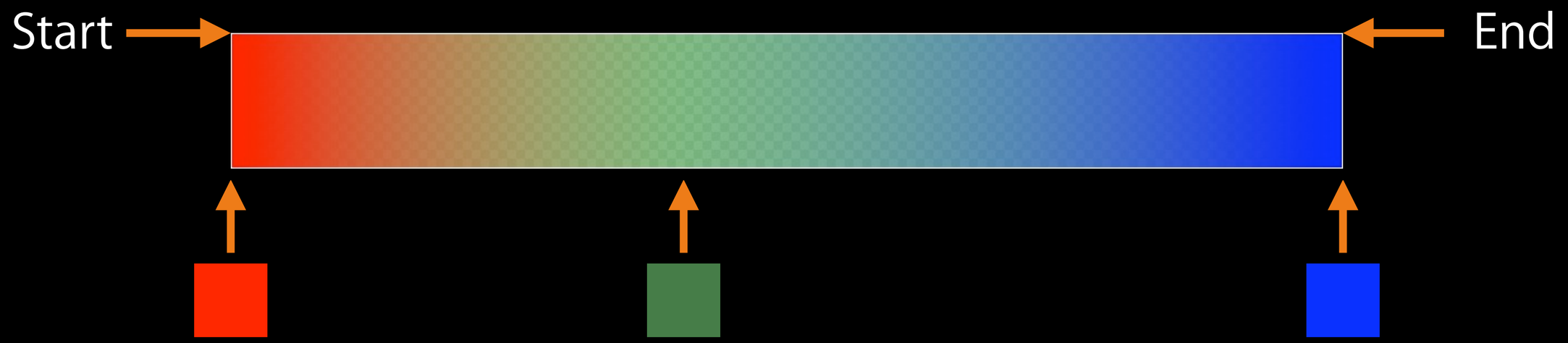
Making the Glass Effect

- CSS gradient
- Canvas as mask

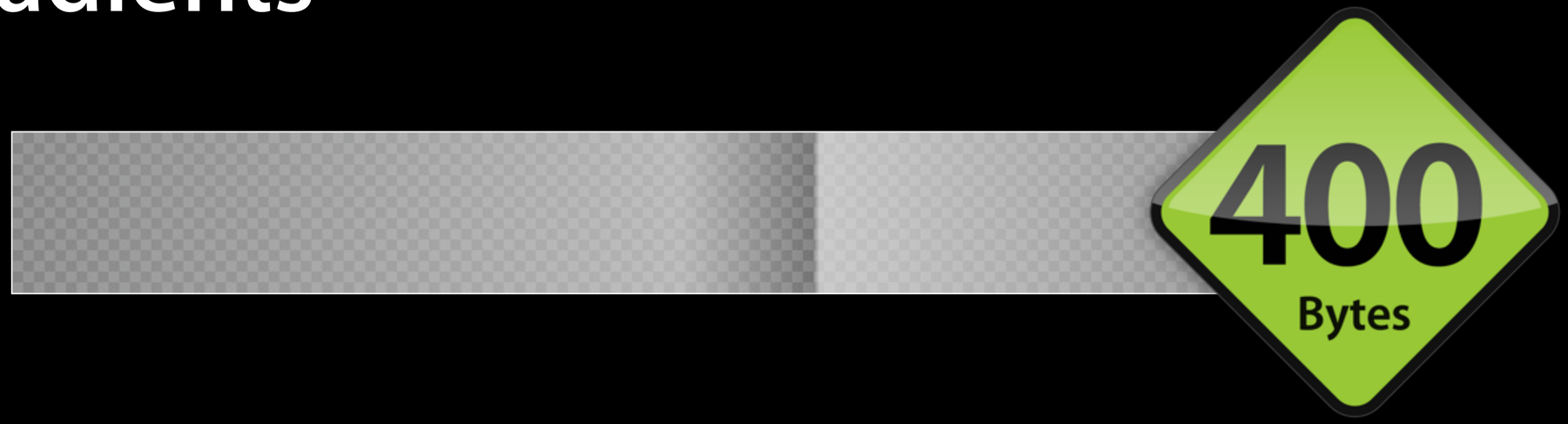


CSS Gradients

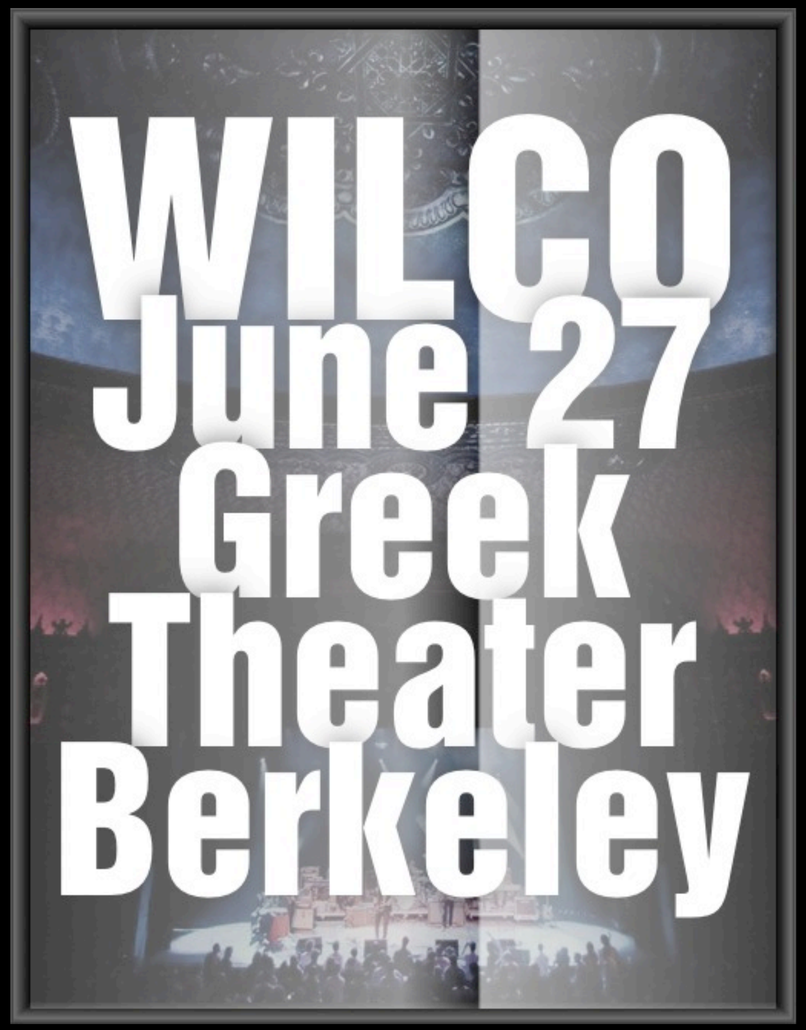



```
div {
  background-image: -webkit-gradient(linear, ...);
                                left top, right top,
                                from(red),
                                to(blue);
                                color-stop(0.4, rgba(128, 255, 128, 0.5)));
}
```

CSS Gradients




```
#poster:after {
  content: -webkit-gradient(linear, left top, right top,
                            from(rgba(255, 255, 255, 0.2)),
                            to(rgba(255, 255, 255, 0.2)),
                            color-stop(0.5, rgba(255, 255, 255, 0.5)),
                            color-stop(0.6, rgba(255, 255, 255, 0.1)),
                            color-stop(0.605, rgba(255, 255, 255, 0.6)));
}
```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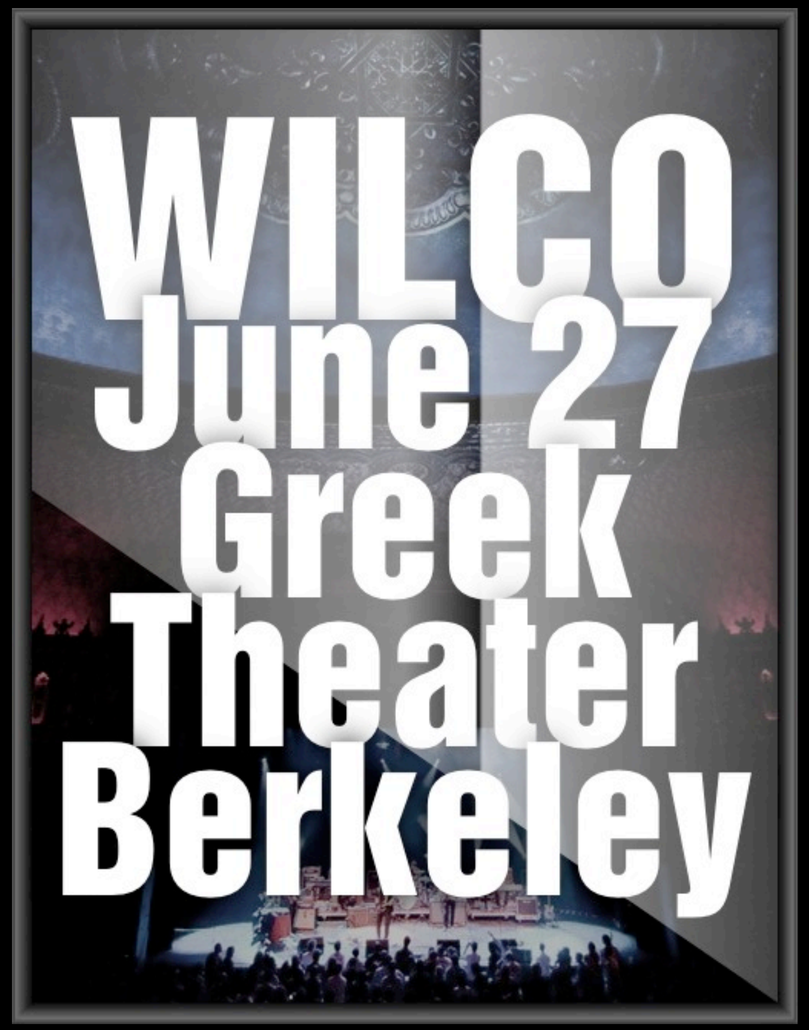
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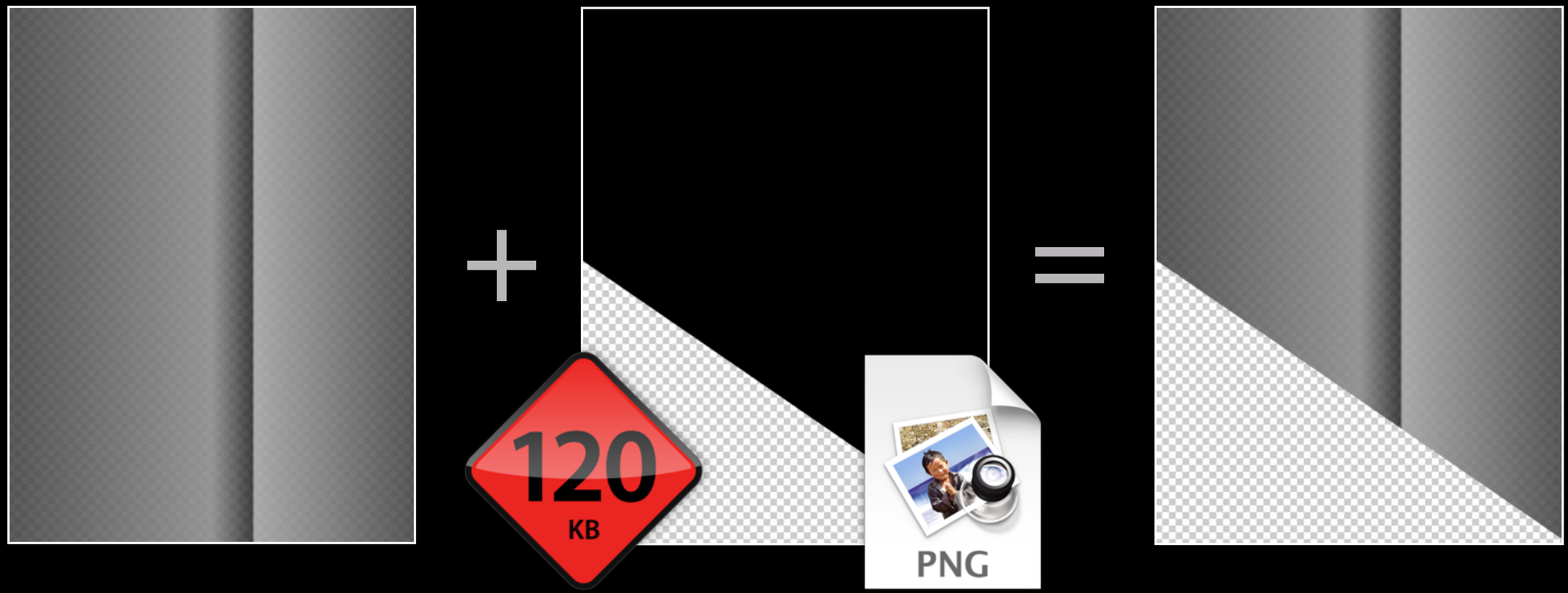
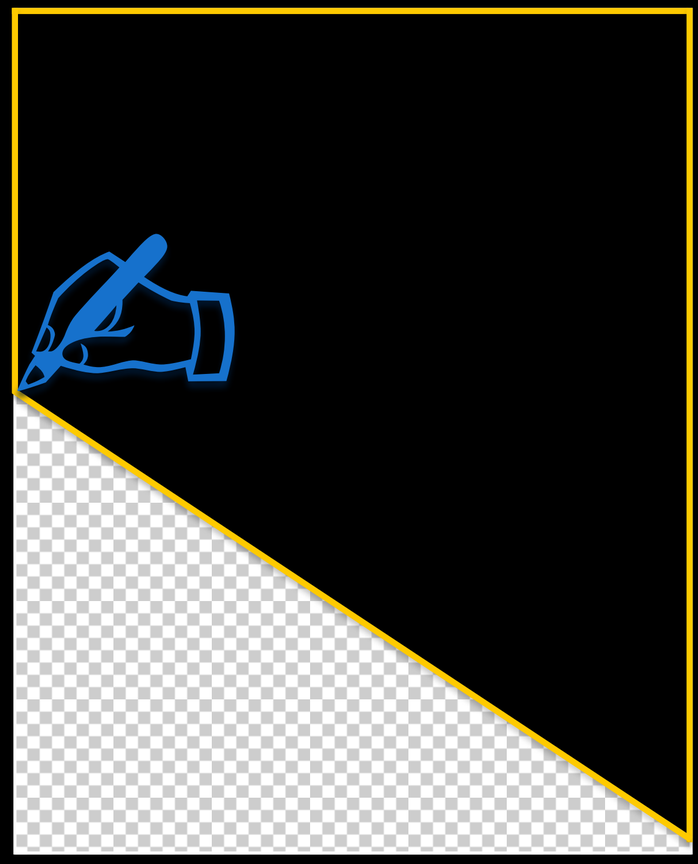
CSS Masks




```
#poster:after {
  content: ...
  -webkit-mask: url('mask.png');
}
```

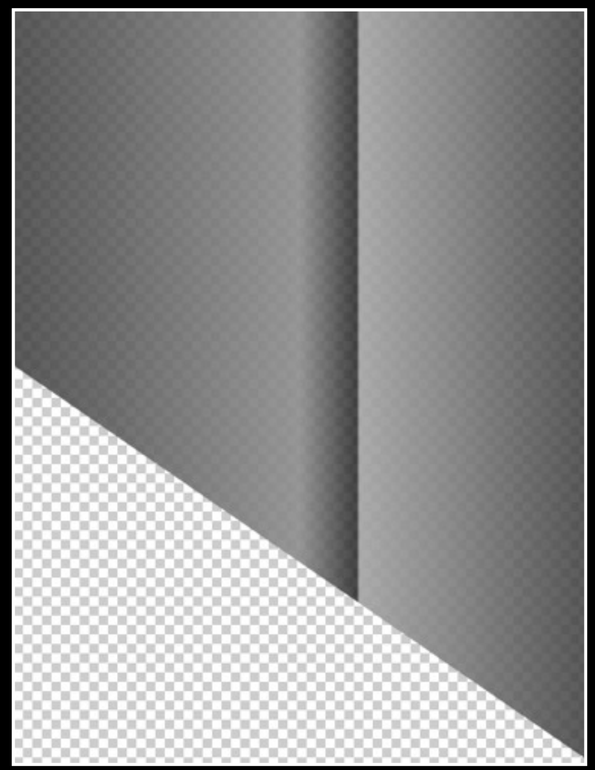
Drawing the Mask

```
function drawCanvas()
{
  var ctx = document.getCSSCanvasContext(
                          '2d', 'mask', 530, 660);
  ctx.beginPath();
  ctx.moveTo(0, 300);
  ctx.lineTo(0, 0);
  ctx.lineTo(530, 0);
  ctx.lineTo(530, 660);
  ctx.closePath();
  ctx.setFillColor('black');
  ctx.fill();
}
```

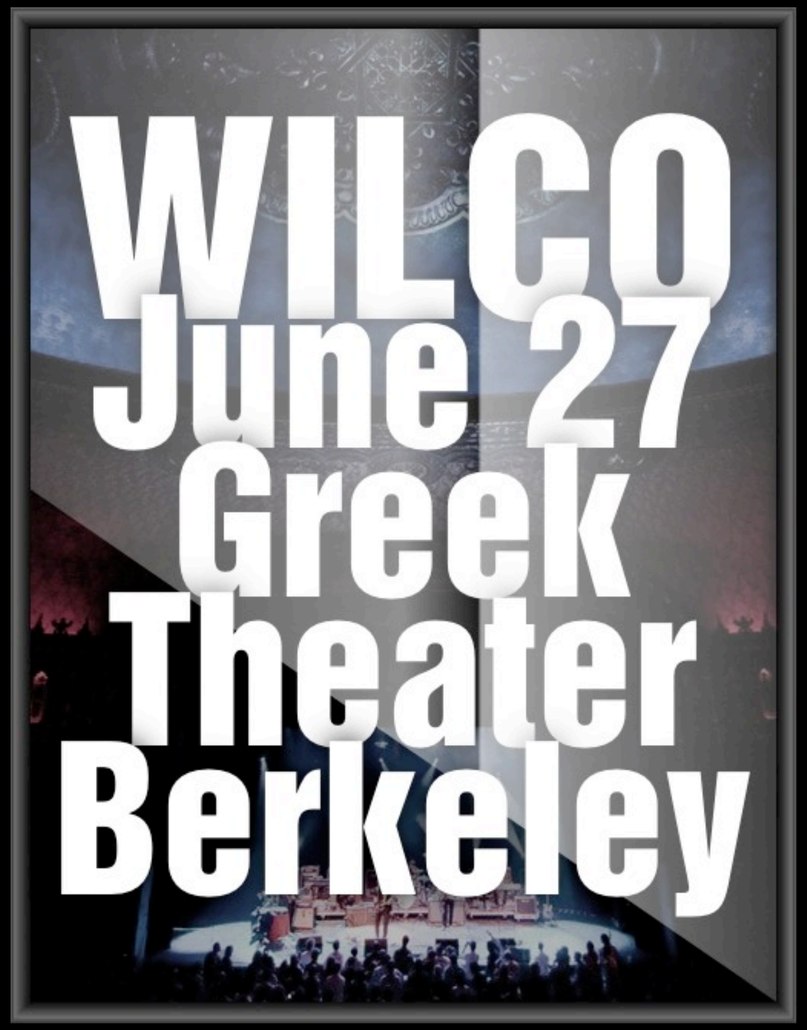


```
 <body onload="drawCanvas()">
```

Canvas as Mask



```
#poster:after {
  content: -webkit-gradient(...)
  -webkit-mask: -webkit-canvas(mask);
}
```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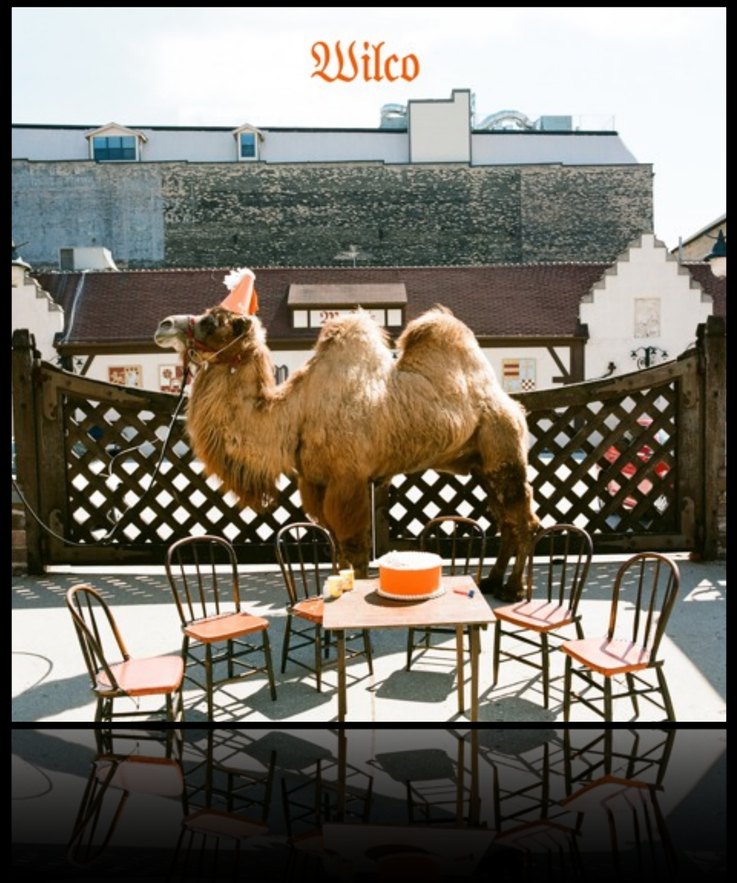
Reflections




```
img {
  -webkit-box-reflect: below 2px -webkit-gradient(...);
}
```

CSS Effects Summary

- Rich collection of effects on text and boxes
- Generate images with gradients and canvas
- Modify presentation with masks and reflections

Tip! Text Shadow

```
h1, h2 {
  text-shadow: gray 0px 5px 5px;
}
```

Text & Image Effects

Transitions & Animations

2D & 3D Transforms

Animation

CSS transitions and animations

CSS Transitions

Animation for free

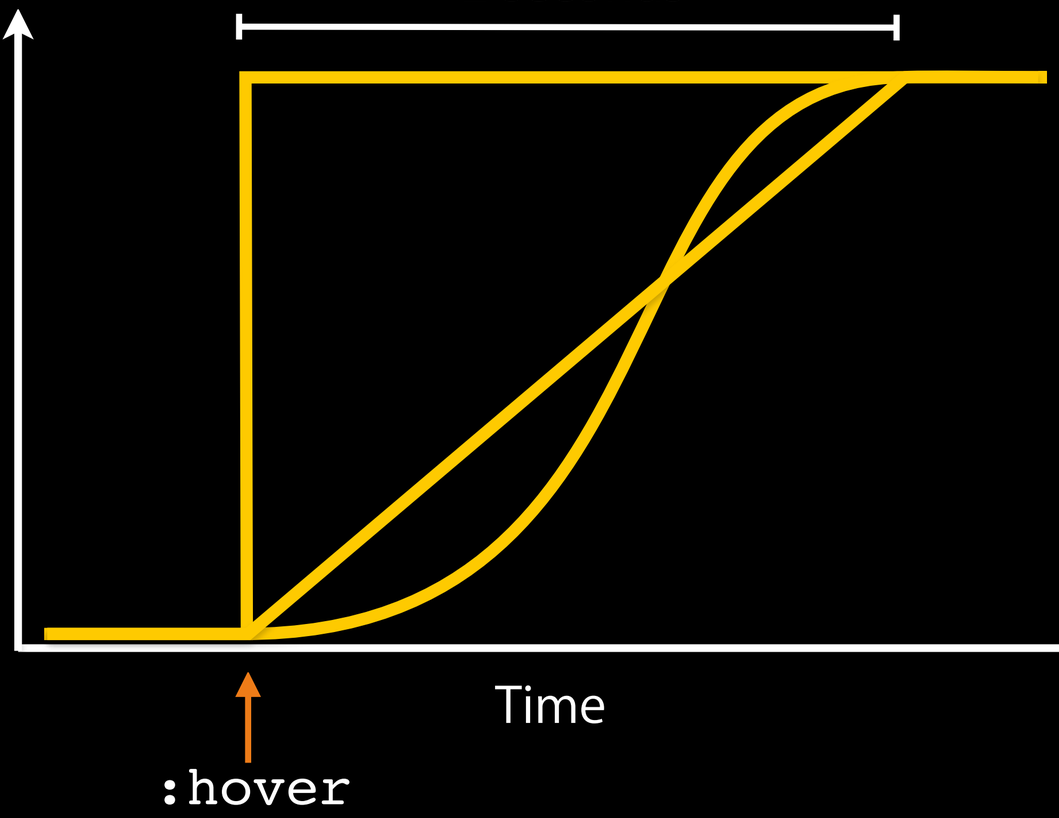
Animation for Free

Less Code!

```
  if (this.fromY == this.toY) {
    return;
  }
  this.startTime = new Date();
  this.endTime = this.startTime.getTime() + (this.duration * 1000);
  this.loop();
};

Animato
{
  var n
  if (r
    thi
    win
    thi
    rei
  }
  var o
  this.setY(this.fromY + (offset * (this.toY - this.fromY)));
  this.setOpacity( (offset > 0.95) ? 1.0 - (offset - 0.95) * 20.0 : 1.0 );
  var _this = this;
  this.timeout = window.setTimeout(function () { _this.loop() }, 10);
};
```

```
.controls {
  height: 100px;
  bottom: -100px;
  opacity: 0;
  -webkit-transition: bottom 0.5s, opacity 0.5s;
}

.video-player:hover .controls {
  opacity: 1;
  bottom: 0;
}
```

How Transitions Work




```
.box {
  left: 0;
  -webkit-transition: left 2s;linear;
}
```

```
.box:hover {
  left: 10px;
}
```

CSS Transition Properties

- Which properties transition

  -webkit-transition-property

- Duration

  -webkit-transition-duration

- Timing function

  -webkit-transition-timing-function

- Delay before start

  -webkit-transition-delay

Which Properties Support Transitions?

- Length properties
  - position and size; border, padding, and margin sizes
  - background and mask position and size
- Font size, line height, letter, and word spacing
- Colors
- Shadows
- Opacity
- Transforms
- And more

Tip! Transition on Link Hover

```
h1 {
  -webkit-transition: background-color 1s;
}

h1:hover {
  background-color: #609F37;
}
```

CSS Keyframe Animations

Explicit animation

CSS Animations

- Use CSS to put an element into an animating state
- Two parts
  - Set of keyframes
  - Properties to control the animation
- Precise control
  - Keyframes
  - Repeating
  - Alternating
  - DOM events

Animation Properties

- Apply a set of keyframes

  @-webkit-keyframes name { … }

  -webkit-animation-name

- Length of one cycle

  -webkit-animation-duration

- Number of cycles

  -webkit-animation-iteration-count

- Reversing

  -webkit-animation-direction

- Per keyframe timing function

  -webkit-animation-timing-function

Driving the Bus

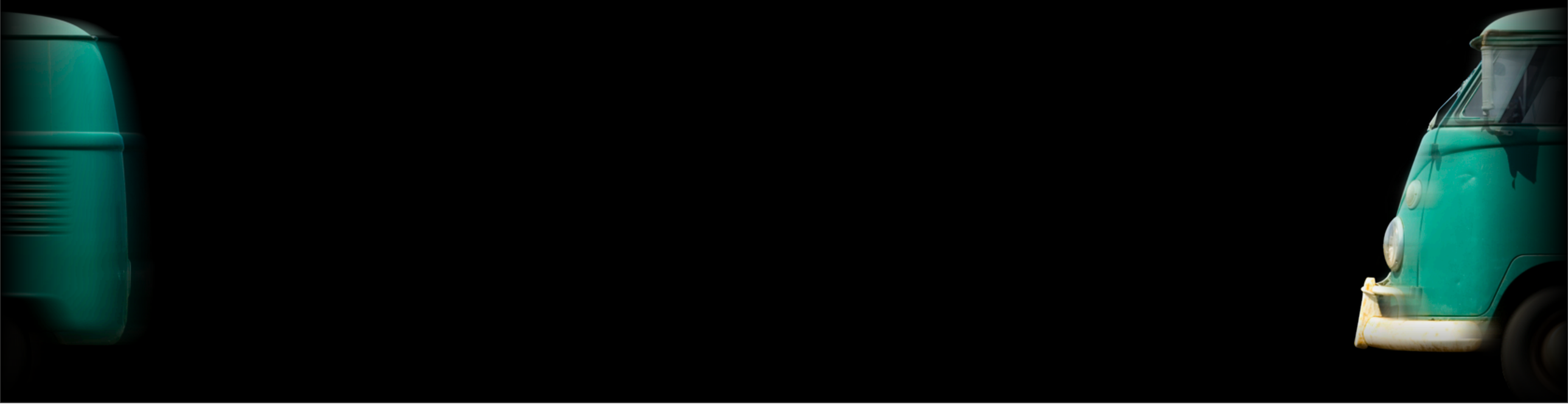
```
<img id="bus" src="assets/poster/vw-bus.png">
```

```
#bus {
  position: absolute;
  left: 1400px;
}
```

Bus Animation

```
@-webkit-keyframes drive
{
  from { left: 1200px; }
  40%  { left: 1200px; }
  to   { left: -800px; }
}
```

```
#bus {
  -webkit-animation-name: drive;
  -webkit-animation-duration: 6s;
  -webkit-animation-iteration-count: infinite;
  -webkit-animation-timing-function: linear;
}
```



How Animations Are Applied

- Active animations trump all other values
- Effects of an animation disappear when it completes
- Override animations with:
  - -webkit-animation-name: none;

Tip! Easy Progress Bar

```
#progress {
  background: white url('progressBar.png') repeat-x 0 0;
}

@-webkit-keyframes spin {
  from { background-origin: 32px 0; }
  to   { background-origin: 0 0; }
}

.running {
  -webkit-animation: spin 1s infinite linear;
}
```

Transitions vs. Keyframe Animations

	Transitions	Keyframe Animations
Triggered	Automatically	Explicitly
Timing Function	✓	✓
Keyframes		✓
Repeating		✓
Alternating		✓

Demo

Dean Jackson
Rich Media Team
Internet Technologies Group

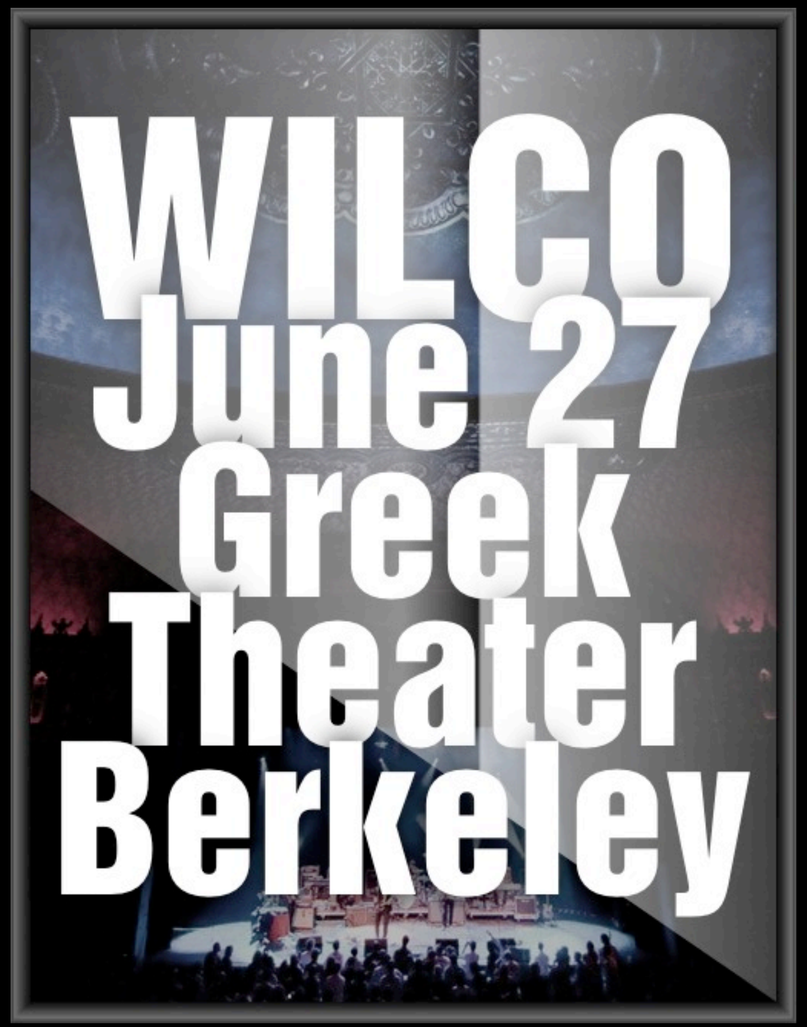
Text & Image Effects

Transitions & Animations

2D & 3D Transforms

CSS Transforms

Moving stuff around




```
#poster {
  -webkit-transform: rotate(3deg);
}
```

CSS 2D Transforms

- Apply transformation with:
  - -webkit-transform
  - Values:
    - translate(x, y)
    - rotate(angle)
    - scale(mX, mY)
    - skew(angleX, angleY)
- Control origin with:
  - -webkit-transform-origin

Tip! Hover Effect on Images

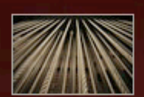
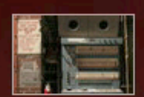
```
img.app-icon {
  -webkit-transition: -webkit-transform 0.3s;
}

img.app-icon:hover {
  -webkit-transform: rotate(10deg) scale(1.2);
}
```

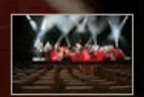
CSS 3D Transforms

Breaking the dimension barrier

3D

120
140
160
180
100
80
0
N
S
Accelerated
32-BIT Rendering



CSS 3D Transforms

- Extension of 2D transforms
  - New values for -webkit-transform
  - Positioning planes in 3D space
- Make it look 3D
  - Perspective
- Build 3D hierarchies
- Single-sided elements

Image Flip with 3D Transforms

Image Flip—Two Faces

```
<div id="container">
  <div class="card"
       onclick="toggleClass('flipped')">
    <div class="front face"></div>
    <div class="back face">
     <h1>WILCO</h1>
     ...
    </div>
  </div>
</div>
```

Image Flip—Placing the Back Face

```
.face {

}

.back {
  -webkit-transform: rotateY(180deg);
}

.card {

}
```

Image Flip—Back to Back

```
.face {

}

.back {
  -webkit-transform: rotateY(180deg);
}

.card {

}
```

Image Flip—Back to Back

```
.face {

}

.back {
  -webkit-transform: rotateY(180deg);
}

.card {

}
```

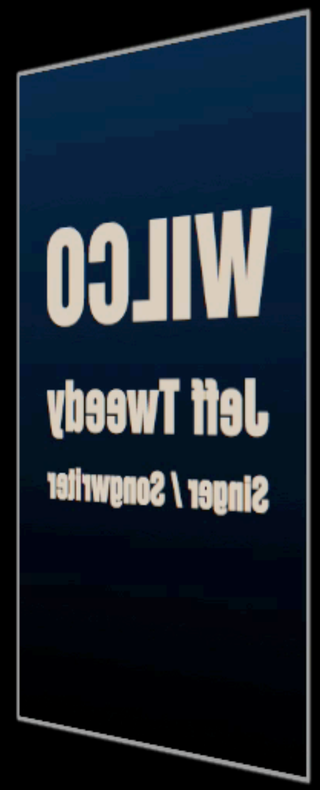


Image Flip—Hiding Back Faces

```
.face {
  -webkit-backface-visibility: hidden;
}

.back {
  -webkit-transform: rotateY(180deg);
}

.card {

}
```

Image Flip—Hiding Back Faces

```
.face {
  -webkit-backface-visibility: hidden;
}

.back {
  -webkit-transform: rotateY(180deg);
}

.card {

}
```

Image Flip—Flipping the Card

```
.face {
  -webkit-backface-visibility: hidden;
}

.back {
  -webkit-transform: rotateY(180deg);
}

.card {
  -webkit-transition: -webkit-transform 1s;
}

.card.flipped {
  -webkit-transform: rotateY(180deg);
}
```

Image Flip— Done, Almost

```
.face {
  -webkit-backface-visibility: hidden;
}

.back {
  -webkit-transform: rotateY(180deg);
}

.card {
  -webkit-transition: -webkit-transform 1s;
}

.card.flipped {
  -webkit-transform: rotateY(180deg);
}
```

Image Flip—Perspective

```
#container {
  -webkit-perspective: 800;
}
```

CSS Transforms

- 2D Transforms
  - Content, not images
- 3D Transforms
  - Interaction with impact!
- Combine with transitions and animations
- Benefit from hardware acceleration

Bringing It All Together

Demo

Wilco—the next level

Dean Jackson
Rich Media Team
Internet Technologies Group

How to Get Started

Vicki Murley
Safari Technologies Evangelist
vicki@apple.com

Mark Malone
iPhone & Internet Technologies Evangelist
mmalone@apple.com

Documentation

Safari Dev Center
http://developer.apple.com/safari/

Related Sessions

iPhone Web Applications from Start to Finish	Russian Hill Tuesday 2:00PM
Sophisticated Media Playback and Animation Through Open Web Standards	Mission Wednesday 3:30PM
Building Compatible Websites Using Emerging Web Technologies	Russian Hill Thursday 5:00PM

Labs

CSS Effects Lab	OS X Lab A Tuesday 5:00PM
Media Playback in Web Applications Lab	OS X Lab C Thursday 10:30AM

Next!

Q&A

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WWDC09